

Current Applications of OMI Tropospheric NO₂ Data for Air Quality and a Look to the Future

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OMI Tropospheric NO₂ products are being used to enhance the ability to monitor changes in NO₂ air quality, update emission inventories, and evaluate regional air quality models. Trends in tropospheric column NO₂ have been examined over the eastern United States in relation to emissions changes mandated by regulatory actions. Decreases of 20 to 40 percent over the period 2005 to 2008 were noted, largely in response to major emission reductions at power plants. The OMI data have been used to identify regions in which the opposite trend has been found. We have also used OMI NO₂ in efforts to improve emission inventories for NO_x emissions from soil. Lightning NO_x emissions have been added to CMAQ, the US Environmental Protection Agency's regional air quality model. Evaluation of the resulting NO₂ columns in the model is being conducted using the OMI NO₂ observations. CMAQ together with the OMI NO₂ data comprise a valuable tool for monitoring and predicting air quality.

Looking to the future, we expect that the combination of GOME-2 (morning) and OMI (afternoon) data sets obtained through use of the same retrieval algorithms will substantially increase the possibility of successful integration of satellite information into regional air quality forecast models. Farther down the road, we anticipate the GEO-CAPE platform to supply data possibly on an hourly basis, allowing much more comprehensive analysis of air quality from space.